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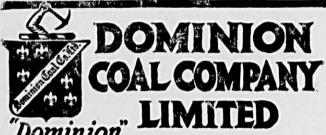
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# SAPPERS WORK

Interesting Account of the Start of a Night's Work in One Issue.

WORK BEGINS AT DUSK.

Men Take Their Life in Their Hands Laughing and Joking.

The following is an extract from a newspaper called "The Western Scot," printed by a Harvard student O about one mile behind the lines:

"Human life on almost any one of a | C number of war fronts is replete daily C with sensations. Not a day or a O night passes but someone experiences O a thrill that is not common to peaceful days at home. And of all the O thrills there is one that never fails of O potency; it is that moment when one O just throws a leg over the parapet to begin the night's job of sand bag fill- O

ing and laying on the outside. The sky is yet too bright, as the party winds in through the rear 'C. T.' (as we veterans now dub communication trenches), and comes to a halt | C beyond the S line (which to the initiated conveys, of course, Support Line). It is the children's hour, twixt the dusk and the darkness, and the mixed party of Pioneers and sappers, as they lean up against damp sand bags, wish the night would hurry up and 'lower.' Behind them the sun, which looks impartially on wheat field and battle field, is setting in a great crown of crimson and gold. Against that sky everything that shows above the parapet stands out silhouetted as sharply as the shadow pictures our grandfathers loved to make in days gone by. Outside, who knows where hidden in shell-hole and stump, German snipers wait for a mark? The machine guns are only just begin ning the night's work. Now and again, like a not too insistent landlord, they knock for their rent, and we hope receive but little. The day

chloride of lime. The light has failed noticeably

about two courses all along this side to begin with.' Fritz has finished his frugal supper of sauer kraut and wein, apparently, and is devoting himself whole-hearting hymn of hate. That he intends 'those Canadian pigs a good strafe to prove at least by their numbers to give' is perfectly patent. Machine their appreciation of the kindness of guns are tuning up in a dozen places Mr. La Roque de Roquebrune in comnear at hand, the sharp crack of the sniper's bullet passing over the canyon of trench is regular and convincing, and at intervals there is the sizzling 'Boom-whizz-bang' of his

field guns sweeping our lines. The time has come to go over; no one is afraid; in a few minutes the whole party will be working away merrily; but there is just that moment to pass when one leaves the comparative security of the trench and projects one's devoted and tin sun-bonneted head into the turmoil of whistling lead.

Something moves along the opposite parapet, something that makes no sound as it noses from bag to bag. One of the party swings viciously with a shovel, and the monstrous thing disappears squealing. man who struck curses, others laugh. The incident emphasizes the existent

'All right, boys, come on.' The officer in charge swings himself up on the trench edge, and throws a leg over the parapet. The men follow almost tions. on top of him. The tension is brok-Someone slips, and a dozen giggles ripple along the line. A machine gun begins to sweep, and its leaded stream passes over one's head with a soft unbroken swish. Heads are ducked down on chests, and a muffled voice cheerfully derides the what in blazes are you wasting ammunition like that for?'

'Steady!' a flare bursts like a man holds rigid, and the glaring light bathes the group in radiance brighter will be of peculiar interest to all than noon-day. Like a statuary study those intending to take the trip, and in old marble, every detail sharp and clear, some erect, some crouched, line, a hundred yards away.

The flare dies suddenly, and welcome darkness blankets the party again. 'All jake boys!' A scurry of feet, a rattle of shovels, and the party is in the borrow pit and another night's work is begun.'

UNIVERSITY.

for occupancy. Both are said to be ambulatory patients. These dispenkind in the middle west.

0000000000000000 WESTERN CLUB MEET-

A meeting of the Western Club of McGill University will be held this evening at 7.30 in the Band Room, upstairs, in the Union.

For a number of years the Western Club was the most flourishing sectional club at McGill, but now its ranks are sadly depleted, owing to the relatively small number of Western men here now.

The causes responsible for this state of affairs are twofold in number-the splendid response which the men of the Western provinces have made to the call for recruits, and the opening last year of the University of B. C.

Nevertheless, there are at McGill this year many men eligible for membership in the club-men from either of the four western provinces: Manitoba, Saskatchewan, Alberta, or British Columbia; and an urgent appeal is made to all such students to turn out to-night to the meeting. The main business before the club will be the determining of its future policy, and so on the shoulders of this meeting rests the destiny of one of Mc-Gill's most enterprising sectional clubs.

Turn out, all you Westerners, and don't let our club be one of ever-growing broken links in McGill's chain of student organizations.

The meeting will start promptly at 7.30, and the business will be run through as quickly as possible. "smokes" will be provided.

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La Societe Française Will Enter. princess in Richard II 'plucking roses tain the Cercle Francais.

At 4.30 p.m. to-day, the members of the Societe Francaise, as well as has been fair and the sun warm, and those of the Cercle Francais, will out and traverse. The working par- "Call of the Wild," by the late Jack in the forest disguised as a page. It hold bags, so many with shovels to portance of animals in literature. sacks, and still others to lay them in hears a serious lecture on this subposition on the parapet. 'You'll find ject—and that very rarely by a man Beatrice.' good borrow pits close in to the line,' like Mr. La Roque de Roquebrune, Miss Co says the boss sapper, as he gives the who has manifested great interest in party a final inspection. We'll want nature in his collection of poems enitled "L' invitation a la Vie," and who, as lover of nature, must have made serious study of animals.

After the address, tea will erved. All the members of the edly to the opening strains of the even- above-mentioned societies are urged to be present at this meeting, and so

> ing to deliver this address. Remember the place— Common Room of R. V. C., and above all, don't forget the time-4.30 p.m.

#### WHAT'S ON

TO-DAY. 1.45 p.m.—R. V. C. Basketball

practice, M. A. A. A. gym. 2.30 p.m.-Meeting of Y. W. C. A. at R. V. C. Common Room. 4.30 p.m.- La Societe Fracaise meet Le Cercle Français at R. V. C. 8.00 p.m.-Arts '20-'19 Smoker in 8.00 p.m.-Electric Club meeting.

COMING.

Dec. 7.-Conservatorium Orchestral Concert at R. V. C. Dec. 9-Track Club Picture at 12.30

Dec. 11-Students' Council Elec-Dec. 14-Lecture at McGill Con-

servatorium. Dec. 15-Union Informal Dance. Dec. 18-McGill vs. Laval at Arena.

ELECTRIC CLUB MEETING.

At eight o'clock this evening, Mr. R. M. Wilson, chief electrical en-Huns' marksmanship. 'Frits, you gineer of the Cedar Rapids Mfg. and square-headed, son of a sea-cook. Power Co., will speak before the it some respite. Orders for copies Power Co., will speak before the members of the Electric Club, Mr. Wilson is a graduate of '99, and his lecture promises to be very interestwhite Dominion Day rocket. Every ing. Coming just before the proposed trip to Cedar Rapids, this address will be of peculiar interest to all a good turnout is expected. Mr. Wilson is the master of his subject, they stand gazing into the German and nobody who hears him to-night O will be disappointed.

Columbus people are benefiting by the equipment of the college of medicine at the University of Ohio at the rate of more than 500 a day, according to Dean McCampbell. This col- O lege has received an "A" rating from O NEW BUILDINGS AT CINCINNATI the American Medical Association. St. Francis Hospital, with 150 beds | O

Women and students of chemistry and capacity for 200; Protestant hos- O at the University of Cincinnati are pital, with 50 beds, and the Child- O extremely happy for the new woman's ren's hospital, with 50 beds, brings building and the new chemistry the total of bed patients to 250, withbuilding, which are finished and ready out counting the free dispensary and the best equipped buildings of their saries are all operated by the college of medicine.

# MISS COLLIER

Talks About "Women in Shakespeare."

> CALLS PORTIA FIRST SUFFRAGETTE.

Shakespeare Was Influenced by His Wife, His Daughter, and Lady Mary Fitton.

A very delightful hour was spent by the Delta Sigma Society yesterday in listening to a short address given by Miss Constance Collier, (who is act ing this week in the Princess Theatre), on "Women in Shakespeare."

Miss Collier began by giving a vivid picture of two of the poet's heroines Lady Macbeth and Cleopatra.

"The case of the former," she said, is that of an unimaginative woman married to an imaginative man. Lady Macbeth never understood her husband,-her first speeches show no wickedness, only lack of understanding. Shakespeare gives Lady Mac-beth a certain nobility in the banquet scene, where she sees all her hopes, everything that she has striven after for years, dashed to the ground. Surely there was something fine about Lady Macbeth."

Miss Collier then discoursed briefly on Cleopatra, Rosalind and Portia, "whom some people consider the first suffragette."

"Shakespeare had three inspira tions, his wife, Anne Hatheway, who was older than he, and somewhat inclined to be a shrew. She was therefore the model for his Batherine, Beatrice, etc. Then, his daughter Judith gave him material for his sweeter type of women, for the child in the garden of the Mad King.'

"Thirdly, Lady Mary Fitton, the 'dark lady' of the sonnets, is presented to us in Viola, Imogen, and later Cleopatra.

There is a legend about this Lady the evening wind drifts across the have the splendid opportunity of Mary Fitton, that she was a girl at torn war-worn field, carrying the fa- hearing Mr. R. La Roque de Roque- the Court of Queen Elizabeth, who miliar odor of the trenches; an odor brune deliver a lecture on the role used to speak kindly to the poet, an made up of the smell of damp earth that animals have played in literal unusual thing for a girl of her high musty sand-bags, old graves and ture. This is a very wide subject in position to do. But Lady Mary was deed, and one that concerns the lithigh-spirited, and often in trouble erature of all times—from the ear-with the queen; she used often to go and the engineer N. C. O. is bustling liest beginnings of civilization to our in disguise to the Globe Theatre, to up and down locating shovels and own time. No one who has read "The enjoy the plays of this then humble empty sacks cached in many a dug-Bluebird," by M. Maeterlinck, or the ty has been told off, so many men to London, will fail to realize the im is said that she afterwards jilted Shakespeare for some court gallant. fill them, others to carry the filled However, it is not often that one But the poet immortalized her in his beautiful sonne's, as Dante did

> Miss Collier dwelt at some length on Shakespeare as a philosopher, and then related some small incidents of her own life, of how she took the part of Peasblossom in "Midsummer Night's Dream," at the age of three, and of Puck, when eight years old.

Miss Collier concluded with a very nteresting description of the festival held every year at Stratford-on-Avon, to celebrate Shakespeare's birthday, of the many people who came there to throw one bunch of flowers on the poet's grave. Everyone is allowed only the one bunch, for all must come as equals into the presence of Shakespeare.

The meeting closed with a speech of thanks given by Miss Cameron, on behalf of all students present.

## MANDOLIN CLUB

Will Play at Meeting of Medical Society on Friday Night.

On Monday night, the Mandolin Club, attired in feathers and warpaint, held their regular practice and rehearsed the music which they intend to serve on Friday night before the members of the Medical Society. There is a treat in store for that learned body.

After practice they adjourned to Gordon's, where a highly actinic illuminant was waiting to throw its searching beams upon their classically chiselled countenances. The camera rose to its stupendous task and succeeded in withstanding two shocks it some respite. Orders for copies will be taken on Friday night at the Medical Society lecture.

Members are requested to meet on Friday evening at the New Medical Building at 8.30 sharp. Bring instruments and music.

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MED, FOOTBALL PHOTO.

The photo of the Champion Medicine Football team for the 1918 Annual will be taken at the Rice Studios on St. Catherine St., on Friday, at 5.15 p.m. The following men are requested to turn out as promptly as possible, and get into the picture: Donnelly, Deslauriers, Gilhooley, Touhey, Fleck, Busby, Fawcett, Taylor, Hunter, McCulloch, Pitts, Patterson, Parsons, Gibbs, Dowd, MacDonald, Walters, Bulger, Greenwood and Upham.

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"THERE'S A BUNCH OF McGILL MEN."
"There's a bunch of McGill men," remarked a well dressed gentleman the other evening in one of the amusement places largely frequented by students of all types from our University. The remark in itself, does not convey much to a person, ordinarily. It was the occasion and the means he took of identifying them that is most worthy of attention by McGill men. While the inner processes of the gentleman's mind are, of course, unknown, it would certainly be interesting to be able to see just how he came to draw such a con-

The men referred to were in most respects similar to any others in the room, and there was certainly no evidence of any abnormal one time or another by her cheery brain power discernable in a casual glance at them, nor were they to be distinguished by any colors commonly looked upon as "Me-Gill" colors. There was only one outstanding thing about them, and that was their conduct. One's attention was immediately attracted ship with her began and grew in coltheir way by the persistent hum of conversation that drifted from the particular corner which they had monopolized. The conversation was an unusual one in many respects. First, it was very guarded and inoffensive, then, as some of the more insistent of the party became factors in the conversation, the volume of sound was increased by excessively loud words from one of them, whose sole means of gaining a point in the discussion seemed to be through the strength of his lungs. His voice rose and carried above all else to the farthest corners of the room, at a pitch which far exceeded the bounds of good taste. The persons under discussion were being subjected to a ing or a Hallow E'en frolic with very frank, to say the least, picking to pieces by these splendid ex- equal enthusiasm It is her frank amples of what a University does not care to own, that is, boors. The language used was hardly above that of the proverbial "sea-cook," and was modernized to an extent not to be equalled even by that ver-

As to the subject under discussion, it seems, from scraps of this windy individual's conversation, that all of this wordy combat centered about no less individuals than members of the teaching staff. It later developed, to the enlightenment of everyone anywhere near, that these staff members were the most deprayed objects imaginable cal or moral. She is never too busy and that McGill was a harbor of crooks in the sheepskins of the professoriate, and of a few other no more enviable characters. Even the head of his class, or to be sorry the names of the horrible examples were brought out finally in an with you if you tear your new recepunguarded remark of one of the leaders.

Just to review the actions of these men. First, they talked in count of a temporary indisposition of high pitched voices in a public place, to the annoyance of all others present; second, they discussed the fairness of a person who should the name of "A Good Sport." command their respect before a lot of strangers, and without the knows and plays all games. Some persons accused having a chance to right the wrong impression left.

These, then, are the things that made onlookers recognise them at once as McGill men, and, as McGill men, typical of all McGill men girls whose labored progress she has guided around the rink. from their point of view. It would seem that some radical difference in conduct of many of our men in public places is necessary if the little things, and does them, that we love her. When a telegram sum-McGill is to be looked upon with respect in Montreal, and that it is mons you home on account of your the duty of every McGill man, whose inclinations run toward the mother's serious illness, it is she who running-down of perfectly respectable people, to at least curb their all the while. After your return, it is she who lends you her notes of the desire to anathematize while in public places.

Y. W. C. A. MEETING.

ing was planned in which the girls

were to discuss the purpose of the

society In addition to this meeting,

there will be an address by Miss Mc-

Kowen, who for the past few years

has been teaching a girls' school in

Japan. She is interesting and at-

tractive, and will wear a native cos-

tume, thus making her talk on the

subject of Japanese girls more real-

istic. She is just in Montreal for

this week, and we have been very

fertunate in securing Miss McKowen

for this meeting. It is hoped that

everyone will take advantage of this

opportunity to hear of her splendid work. The meeting will be in the Common Room at 2.30 sharp. Al

Women students at Stanford have

just completed a very tedious experi

ment which, if successful, may prove

equally interesting. Each of the

"five hundred" was provided with a

printed form on which she was to

note down the different things with

which she occupied her time each five

minutes for two days. The Daily Palo

Alto, student newspaper, was either

gullible enough or good natured

erough to announce the experiment

with an opinion expressed as follows:

"It is believed that the results com-

About thirty undergraduates of

E. Courtney, Cornell's "Old Man," on

been head coach of the Cornell Navy

for thirty-nine consecutive years.

When but nineteen years of age Court-

ney won a singles championship of

sculler and set a new record of thirty

crews have won forty-nine races out

of seventy-two starts.

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#### INVITATION TO McGILL.

Mr. J. H. Sherrard, of the National Service Commission has informed McGill Daily that a mistaken impression seems to have gained credence about the city. This is to the effect that the meeting which will be held this evening in the Monument Nationale on the question of National Service under the auspices of the Board of Trade and Banque de Commerce is a political one. Such is not the case. To quote Mr. Sherrard, "This is to be a public meeting, and special invitations are being extended by the National Service Association to the students of Mc-Gill University and of Laval. Reservations for space are understood to be made for the students in the gallery.

"I am writing this letter with the request that this invitation be given proper attention in the columns of Wednesday's issue of your paper."

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#### FRESHMEN WEAR RED CAPS.

The freshmen at the University of puted will afford information as to Georgia have voted to follow the cus- just how college women employ their tom started by the class of '09 and time." wear red caps. The initiative was left wholly to the freshmen.

#### HOCKEY PRACTICE.

There will be a practice of the hockey team this evening at the the occasion of the sixty-seventh an-Arena from 6 to 7. All the men are niversary of his birth. Courtney has requested to attend

TEXAS WANTS SEVEN MILLIONS. A campaign is being waged in the the state in a boat of his own build-Texas legislature for an appropria- ing. Later he became a professional tion of \$7,000,000 to put the state university on a higher plane. This is pine first places out of forty-six races the first state aid Texas has received entered. Under his direction Cornell for several years.

A sophomore in the University of the candidate was under age the co property adjoining its home, and clerk of the county refused to put his is reported to be piling up a considname on the ballot. His Republican erable revenue from the sale of fruit Drs. Thornton, McClelland, DePencier, friends, however, wrote it in, and he not needed on the fraternal dinner Saunders, Strang, Le Febvre, Silver its educational justitutions. won after receiving in all sixty votes. table.

The Daily is not responsible for the sentiments of letters published in the correspondence column. Signed communications from graduates, undergraduates and members of the faculty will be placed in print if they are not of too great length.

CORRESPONDENCE.

Correspondents are requested to observe the unwritten law of the newspaper office - that they write upon ONE side of the paper ONLY.

To the Editor of the Daily:

Dear Sir,-At a meeting of the R. V C. Undergraduate Society to-day, a letter was read from you concerning the "Freshette's Letter" in the Daily. You stated in this letter that "a number of Donaldas declare that they are just great." Had you take i the trouble to ascertain the opinion of the R. V. C. undergraduates diinstead of indirectly, you would have discovered that the R. V. C. undergraduates, with hardly a single exception, are not enthusiastic over these "letters."

I may add that no one in the R. V. C., with the exception of the writer herself, knows who is the authoress of these letters. We all feel however, that to allow these letters to be published without the cognizance of the R. V. C. editor, is a disloyalty of which we did not think any member of the R. V. C. capable.

Yours truly, DOROTHY G. HICKS, R. V. C. '17.

ATTENTION MEN! The ideal College girl. The following article was taken from the Argosy, a publication of Mount Allison University:

The ideal college girl is not a mythical character. She is found in cur midst-a living, breathing, lovable reality. We have all seen her, and known her, and been helped at kindness, and warm sympathy. Her charm and individuality are not dependent upon environment. would be the same at home or es It is only that our friend-

Her hair may be wavy or it may be straight, her eyes may be blue or These external features are Somehow we fail to attach much importance to them. Ask someone who knows her if she is beautiful, -but I like her." The first part of the reply may be hesitant, but the last is decisive.

Her's is a many-sided character. She will "lead" a Y. W. C. A. meetwhole-heartedness that makes her so attractive Her co-workers in college ciganizations have learned that she is to be relied upon to faithfully execute any task assigned her. However exacting the demands of the occasion she is ready to do her very best to meet them

The days of our Ideal College Girl are full; sometimes they are crowded, yet she always has time to help you with a problem, be it mathematito be glad with you when your big brother passes his medical exams at tion dress, or if your anticipated week-end at home is postponed on ac-

The athletes of the college give her

It is because she always thinks of lectures you have missed.

She is human and sometimes breaks rules, but she can always be depended upon to take her full share of the punishment. This afternoon, a Y. W. C. A. meet-

Like other girls, she knows what it is to be tired and lonely and disccuraged, but she fights her battles alone, and come out of them able to meet you with a smile.

Because of her loyalty to her College, she is intolerant of anything which may shadow its fair name. She loves and revers her Alma Mater, and she is going out with the determination to live only such a life as will bring honor to it.

A good comrade, optimistic, unselfish—her religion is contained in one word, "Others." Here's to her!

## MET MONDAY EVENING

Messrs. Douglas Derrick and H. H. Pearson Read Papers.

For the first time in its history the programme of the McGill Dental Undergrad Society, whose meeting was held at the New Medical Building on Monday evening, consisted of papers on technical subjects, which were presented by undergraduates of the Department.

Mr. F. Douglas Derrick, sec.-treas. of the Society, opened the programme with a paper on anaesthesia. He discussed the merits of the drugs, laying special emphasis on Novocain. The latter was illustrated with slides Cornell, mostly crew men, gave a showing the technique of administrasurprise party last week to Charles

Mr. H. H. Pearson followed, taking for his subject Radiodontia. After briefly explaining the principles underlying the X-ray, a short description of the machine used in dental work was given, after which a number of prints showing photographs of numerous cases.

A feature of the evening was the presence of practically the entire student body, and of a great many graduates and teachers of the Department. These latter took a lively part in the discussion which followed the reading of the papers, and Kansas was recently elected County | A fraternity at the University of expressed gratification at the appar-Attorney of Wichita County. Because Oregon has acquired an apple orchard ent thriving condition of the Society. Among those in attendance were

and Halperin.

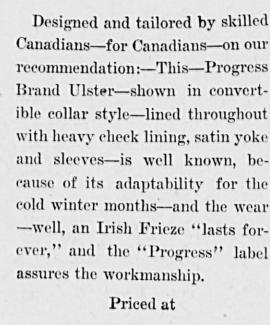
Iowa State college at Ames is planning to build a new women's dormitory, science building, plant industry building, water tank, lagoon and bleachers this year. This will call for an expenditure of more than \$230,

A student of Millsays College in Mississippi was last week denied the right to transfer to the State University because of the fact that he was a member of a fraternity. Mississip-Captains Driver, Cleveland, Lipsey, pi has a state law prohibiting fraternity men's attendance at any of

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HELD OVER

patronage that this picture has re-

ceived, it will be shown for another

ENTIRE WEEK

ied by its own Orchestra, and that

combine the two bodies, making an

On account of the unlooked-for

#### **AMUSEMENTS**

#### **PRINCESS**

THIS WEEK-Mats: To-day and Sat. Three Big Stars. Thomas A. Wise as Falstaff,

Constance Collier as Mistress Page, Isabel Irving at Mistress Ford. in a truly human and rollicking version of the greatest comedy of Shakespeare
THE MERRY WIVES OF WINDSOR, In view of the fact that "THE BIRTH OF A NATION" is accompan-

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#### the Montreal Symphony Concert Orchestra has to be retained with full pay, the management has decided to

organization of 40 MUSICIANS 40 The Reserved Seats Sale will continue as before at Lindsay's Music

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Re-engagement by popular request of the celebrated tenor, WILLIS FLANNAGAN.

E. Pettit, professor of astronomy at Washburn, has found that Washburn is off the map. The campus was laid out by the government surveys in the wrong latitude. The college observatory is nearly 100 feet east of where

#### ENROLLMENT INCREASES AT BOSTON UNIVERSITY.

Boston University, with its prospecof 3,000 students during the present year, is making a great race for nuland colleges. It is already third in place. Its rivals, Yale and Harvard, had 200 years the start.

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FRESHMAN-SOPHOMORE SMOKER.

ing hard lately to give the

Dean Moyse has been pre-

vailed upon to be present, and

to address the students. Mr.

Philip Presner, who delighted

his audience at the Arts Un-

dergraduate smoker with his

violin solos, has consented to

play again this evening. Be-

sides these, Mr. Suter will im-

personate several of Dickens'

characters, whilst the Strathcona Hall Orchestra will fill up the intervals with some

All the Freshmen are requested to be on hand to give

the Sophs, an enjoyable evening, and it is up to the Sophs. to do justice to their efforts.

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McGill Graduate Did Good Work

in France With the Third

Artillery Brigade.

Major G. G. Corbet, Med. '98, now officer in command of the Field Am-

bulance Depot at St. John, N.B., has

a splendid record and experience as a campaigner. He has always been connected with some military organi-

zation, and was for some time medi

cal officer for the 28th New Bruns-

wick Dragoons. He later left that pesition and took a commission in

the regiment. When war broke out

batant along with the other members

of the regiment, but as cavalrymen

were not required, Major Corbet then

offered his services to the Army

Medical Corps, and was immediately

the 10th Battalion on the Scandinav

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WAJOR CORBET BACK IN

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ELECTRICAL CLUB.

(Continued from Page 4.)

The French Swedish Co., Societe

orwegieune de l'Azote, with head

quarters in Paris, had sold out in 1910 to the Badische Anilui and Soda

Fabrik Co. of Berlin. When I visited

the plants in Norway in 1906, they

were the property of the French Co.,

but even then the whole output of

calcium nitrate was shipped in Nor-

and all, was turned over to the Ger-

man company. Acting for some Canadian capitalists I endeavored to ob-

lengthy negotiations, which up to 1910

appeared to be successful, I was ad-

used at Rjukaufos, Norway, 250,000

-the efficiency of the operation be-

To those interested in the problem

would refer them to a paper by

limitation imposed by the laws of

Electrical energy in Norway is fig-

known water power in Norway were

harnessed to develop electrical ener-

gy, and this energy used for the pro-

duction of calcium nitrate, the pro-

duction would not be one tenth or

mal or an electrical effect, or again a

mixture of both? This question is, I

believe, not yet settled amongst scien-

Summers states, p. 344, A molecule

of nitrogen is composed of two or

It therefore seems certain that be

of 28 indicating two.

the world's consumption to-day.

signed at that time.

chemical engineer.

profitable.

wegian bottoms to Hamburg.

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The faculty of the University papers and examinations written with

Field hockey is a favorite sport end of the war, to be merged as a go-among the women students of the ing concern in whatever system the but an amendment by Lord Cheyles-University of Chicago. More than Government might adopt for the retwo hundred girls signed up in reconstruction of the military forces of clude the policy of compulsion, was sponse to a recent call for candidates, the Empire. It would do more; it subsequently carried.

## CONCERT IN AID OF

Miss Ellen Barron and Mr. Norman Notley Will Appear on. Programme of Women's Union Event.

1907 the whole undertaking, patents With a view to providing field comforts for the men of the Princess Patricia's Canadian Light Infantry everseas, the McGill Women's Union tain patent rights for Canada of the Birkeland and Eyde Process. After will hold a concert at the Ritz Carlton Hotel on the evening of December 12, at which the soloists will include Miss Ellen Barron, one of the vised, without much explanation, that most brilliant graduates of the M: the German company did not care to Conservatorium of Music follow up the matter any further; pianoforte, and Mr. Norman Notley, the deeds of transfer had only to be of the teaching staff of the Conservatorium. A feature of the concert will be the fact that returned mem-The thing that makes the process most interesting is its wonderful in- bers of the Princess Pats, will act as efficiency from the thermal and en-

ergy standpoint. There is actually Miss Barron, since leaving th Conservatorium, has studied under H.P., but there is actually utilized for Joseffy and Hoffman, in New York chemical operation 3.500 H.P. City, and has offered her services to All the rest of the 250,000 H.P. is lost help the Princess Pats.

The patronesses will be Lady The wonderful room for improvement is one of the most interesting and of the most inte is one of the most interesting and at W. M. Birks, Howard Wilson and tractive researches to the electro- H. W. Ross.

BRITAIN'S CADET TRAINING. LONDON, England. -- The Lord Summers entitled Atmospheric Nitro- Mayor of London lately held a congen A.I.E.E., 1915. The theoretical ference at the Mansion House at which he outlined a scheme for the physical chemistry to such process national organization of cadet traininvolving chemical dynamics are set ing. He dwelt on the necessity for a representative body in close touch The most important factor upon with naval, military and educational which the cheapness of the process authorities. The conference passed a depends is cheap power, as it re- resolution approving the scheme, but quires practically 3 E. H.P. year at urged that cadet training should be the electric plant per ton of nitrate. made compulsory throughout Cheap and large sources of power country. must be used to make the investment

The Lord Mayor explained that the centre of the scheme was a council which would be in close touch on ured at \$7.00 per H.P. year, interest and depreciation included. If all the the naval side with the admiralty and naval cadet units, and on the military side with the Army Council, the Territorial Force associations, and the military or senior cadet units. To the council all questions affecting the cadet forces could be referred to be dealt with, or passed on to the Is the oxidation of nitrogen in the Territorial associations. At the same electrical discharge a purely thertime the Territorial Force associations would be in direct touch with cadet units in matters more essentially military. The Boys' and Church Lads' Brigades and other similar bodies should remain under their existing organizations, and be in touch with the council to such extent as

more atoms united together with a bond representing a large amount of they might find convenient. energy. Nitrogen has an atomic With regard to the cadet himself. weight of 14, and a molecule a weight at the age of 9 he should become a junior scout. From the age of 11 to 15 he should be a full Baden-Powell fore the 25 years shall have elapsed scout, unless he joined the Boys' Brisince Sir Wm. Crookes made his memgade, Church Lads' Brigade or cadet erable address, the Chili nitrate beds organizations. At 14-15 on leaving will have vastly curtailed their proschool, he should have been so trainduction-not from exhaustion- but ed as to desire to become a senior from the inroads made by the oncadet and remain under training unward advance of electro-chemical entil he attained military age and passof formation of cadet committees in ev-Southern California has ruled that ery county, and borough, and the appointment of a responsible officer to factor. the new fangled simplified spelling act as area staff officer, as in Auswill be perfectly acceptable. had outlined would be ready at the proving the scheme initiated by the

of the situation. There was a hospital at Bulford, another at Netherav en, and a third at Fighledene. Major Corbet went to France, and remain ed at Rouen for a time, but after the big battle of Ypres, when so many medical men were killed and wounded, he offered for service on the firing line, and was accepted, and was detailed as medical officer for the Erd Artillery Brigade, which was made up of Toronto, Hamilton and

St. Catharines men for the most part. He passed through some very heavy engagements with the 3rd Artillery Brigade, Festubert in May, Givenchy and LaBasse in June, and on Sep tember 20, when the British and French troops made their famous drive at Loos near Arras in an effort te recapture Lille, Major Corbet's brigade was the only Canadian force to be included in the big push. Speaking of the bombardment, he said that on September 25 it was estimated that one million shells were fired, and of the sixteen guns in his brigade they fired 4,400 shells that day. He was stationed near Ploegsteert for a while, and later at Lindenboek, near

Kamel. From thence he was transferred to No. 2 General Hospital for special uty, but shortly after the change injured his knee and himself became a patient. Later he was sent to Canada in charge of a party of invalided men, but returned again in April. On reaching England a second time he was detailed to act as registrar of the Canadian convalescent hospital at Bearwood, and some time later was recalled to Canada to take charge of the field ambulance depot here, which he now commands. Major Corbet therefore has a splendid war record, and it has been one of the big factors in the rapid recruiting of the field ambulance train. Mrs. Corbet was formerly a Miss Bird, of Montreal. and is a sister of Mrs. Duval, whose husband, Major J. L. Duval, Med, '98 died of wounds suffered in the fighting in the Ypres salient, and whose body was lost when the Hesperian was torpedoed.

Capt. J. A. McCarthy, who is adjutant of the field depot, is another well known McGill man, who has tak en on the vestments of the king and proven an officer of splendid parts He is a St. John boy, and graduated from McGill University in 1910, after studying at St. Joseph's College. Since that time he has been practising in St. John, and has made a specialty of X-ray work, which has won him not a little recognition in the medical

would provide a national manhood disciplined and self-controlled, which, following the splendid example of the heroes of the war, would make the Empire not only sound to the core, but impregnable without and

Lord Cheylesmore, in the course of discussion, maintained that cadet training should be in every case compulsory, but Sir Reginald Hennell considered that boys would come forward readily enough if the voluntary system were carried out in the proper manner. He advised the formation of committees which would have as their object the enlargement of all existing cadet corps, and the institution of new ones. Attention should be concentrated on the matter at once. If the best results had not been attained at the end of the war, however, the War Office should be approached with a compulsory scheme. Colonel Yate, M.P., also de manded a perfect system of compulsory physical education and physical training in the form of cadet corps, as part of the curriculum of all seced into the regular or territorial endary schools. Captain Hoare urged forces. The council would invite the that there was a danger, if compulsory training were adopted, that militarism might become too great a

A proposal to form a National As-sociation of Cadet Training and a

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accepted. He was then attached to the No. 1 General Hospital at Que-bec, with Lieut. Colonel Murray Mac-Laren, and which went overseas with

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The course includes a thorough grounding in Mathematics, Civil Engineering, Surveying, Physics, Chemistry, French and English.

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#### Prof. Herdt's Address to the Electrical Club.

Mr. President and Gentlemen.

I am glad to meet you, the mem. product. bers of this Society, and to meet for The nitrogenous compounds are

believe, by Mr. Burr, and subsequent- peter, charcoal and sulphur. Smokely by your President. I had no ob- less powder utilizes Chili saltpeter jection to it, however; the subject is that is nitric acid, in its composition. postpone the day of famine, the day in their production. of starvation, to so distant a period

dantly fertilized, voiced the following opinion, which sounded as a trumpet call over the whole world:
"By 1931, 231 million units will

likely be added to the bread-eating population. Will the arable areas of he temperate zone now partially occupied grow the additional 330 million bushels of wheat required by a hungry world?'

He also added:-"Before we are in the grip of actual postpone the day of famine to so distant a period that we and our sons and grandsons may legitimately live without undue solicitude for the fu-

increased intellectual comfort, luxury or convenience; they serve to make are four distinct lines of developlife easier, to hasten the acquisition ment. of wealth or to save time, health or worry; but the fixation of nitrogen unless we can class it among certainties to come, will mean the end of the great Caucasian race; it will be squeezed out of existence by races to whom wheat bread is not the staff

These words were spoken in 1898 eighteen years ago, Sir Wm. Crookes was calling to the scientific world to avert starvation of the world through the laboratory. A few years after this trumpet call in 1906, a large factory was placed in operation in Norway, manufacturing an artificial product the equivalent of Chilean Salt peter, or Nitrate of Soda, the best known of the imported fertilizers.

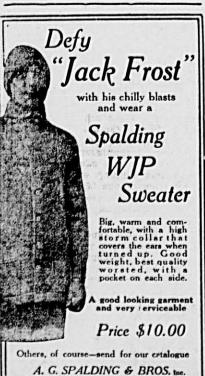
The industrial production of nitr acid and nitrates by utilizing electri cal energy to cause the direct combination of atmospheric oxygen and nitrogen had been realized.

vegetable kingdom. Plants must have nitrogen to live. It is a curious fact that only a few plants can draw upon gen existing in the atmosphere. The nitride or carbo-nitride. great majority of plants and vegethorn, leather, nitrate of soda, sulphate of ammonia, calcium cyanide and nitrate of lime. Of these the nilivia, is the principal fertilizer. It is

a nitrogen compound. In 1913-14, just before the war, the exportation from Chili for 12 months fine my remarks are those enumeramounted to over 3,000,000 tons. In 1830 the exports of Chilean nitrate were only 100 tons; in 1870 they had increased to 150 000 tons; in 1870 they had increased to 150,000 tons; in 1904 to rectly from the atmosphere by the 1½ million tons; ten years later to oxidation of nitrogen or the fixation over 3 million tons.

Chili saltpeter was shipped from Chili to European countries before the war, mainly in English bottoms. It sold at a price of \$45.00 per ton ed through air the air immediately f.o.b. Liverpool and gives an export tax of \$12.00 a ton to the Chilean Government, or between 35 and 40 mil-

lion dollars revenue, Years of exploration have shown that the Chilean deposits are the only natural deposits of nitrates in the world situated in accessible regions. It is also well recognized that these are not inexhaustible. Exact valuations are not possible, but experts declare that exportation such as is taking place will empty the Chilean mines by the year 1940 at the latest. Whatever it may be, as these natural deposits are of limited extent, and as climatic and geological conditions of the country are such that these deposits are no longer forming, it is



371 St. Catherine St. West.

(The following address was deliv-certain that their exhaustion will oc-voltages, greater units and less costly ered by Prof. Herdt before the Elec- cur at some future date and that apparatus, and therefore of obtaining trical Club last Friday evening .- Ed. agriculture and industries depending much cheaper cost of manufacture. on nitric acid for their manufacture, must look elsewhere for some similar

the first time the Juniors amongst used not only as fertilizers, but the you. I have always felt a great in compounds of nitrogen and oxygen terest in this Undergraduate Society, are the nitric acid salts of commerce. and I am particularly pleased to address you this evening at this, the is from 200,000 to 250,000 tons per first meeting of the Society in the year. 50 per cent. of all the Chili saltpeter exported is used in the My subject to-night is not one which manufacture of explosives, as all exwill permit of great flights of elo- plosives have a nitrogen compound as quence. I did not select the subject; the principal ingredient. The origit was selected for me, first of all, I inal black gunpowder uses Chili salt. are interesting. It deals with the manu- All the high explosives, cordite, lydite, facture of a product which in the mellenite, guncotton, etc., require the tial between electrodes is 5,000 volts words of Sir William Crookes "will inherent molecular energy of oxygen

The fixation of nitrogen is vital to that we and our sons and grandsons the progress of civilized humanity; may legitimately live without undue but above all, the fixation of nitrosolicitude for the future." Let me ex- gen is vital to such countries as may lain:
In 1898, Sir William Crookes, in his ean field. The recent realization of presidential address before the Brit- the industrial production of nitric acid ish Association for the Advancement and nitrates by utilizing electrical en-Science delivered at Bristol, ergy to cause the direct combination alarmed at the rapid draining of the of atmospheric oxygen and nitrogen nitrate beds of South America, and has enabled Germany and Austria to well aware of the rapid impoverish- carry on this war whilst the soda niment of the soil unless it is abun- trate fields were closed to them by Great Britain's command of the sea. We have here another instance of German preparedness, as I will show you presently.

The story of the fixation of atmos- cent, of NO. pheric nitrogen can be summed up as follows:-

The problem itself has been worked for over a century it being known nature fixed nitrogen of the atmosphere more recent furnaces of Birkeland and by means of electric discharges and Eyde are of 3,000 K.W. capacity each. Cavendish in 1781 had shown that a sand give concentrations of two per small amount of nitrogen was concent. NO, and a yield of 580 to 600 dearth will the chemist step in and small amount of nitrogen was converted into nitric acid in the com- kilograms of nitric acid per K.W. form water. Fixation processes experimented upon in the last twenty "The fixation of Nitrogen is vital dreds. The majority of these are to the progress of civilized humanyears are to be counted by the hunprocesses which have reached the state of commercial application, there

> (1) The production of nitric acid directly from the atmosphere by means of the electric arc. In this process the nitrogen of the atmosphere is directly combined with its accompanying oxygen without utilize from 1,000 to 1,200 deg. cent. are ing any other chemical substances, passed through steam boilers to cool the process consisting essentially of a powerful are furnace through which ployed in the further manufacture of air is forced, causing at this high the ultimate product, calcium nitrate temperature the nitrogen to combine The temperature of the gases is thus with the oxygen forming nitric oxide,

(2) Fixing nitrogen by means of an electric furnace where the energy of chemical combination is utilized, ers, where the gas is converted into causing the nitrogen to combine with nitric acid. The absorption system some substances with which there is pronounced energy of chemical high by 35 feet in diameter, over ombination. These processes include furnaces utilizing calcium carbide with which nitrogen readily combines | centrated up to 50 per cent., at which | acres. to form calcium cyanide CaCN2, and various processes for making com- tanks, where it is temporarily stored. Nitrogen plays a great part in the binations of nitrogen and a basic or alkaline earth metal such as calcium nitride CaN2 or magnesium nitride, MG3N2, or Aluminum Nitride A1N. the immense resources of free nitro- the chemical action usually forming a

ables, wheat, oats, corn, etc., are monia, NH3, directly from nitrogen (3) Processes for producing amobliged to obtain the azolized or nitrogeneous compounds necessary to their life from the ground itself. The their life from the ground itself. The tric discharge by which the nitrogen principal nitrogenized fertilizers are molecule may be decomposed, and in manure, dried blood, wool wastes, the presence of hydrogen form ammonia.

(4) Producing a high temperature factured from soda nitrate by treat by means of the explosion or com trate of soda, or Chili Saltpeter, found bination of gases directly combining ment with sulphuric acid, about 72 per ment with sulphuri in its natural state in immense decent, of the sodium nitrate being nitric oxide, NO. The NO formed is tric acid. recovered and converted into nitric acid HNO3.

of nitrogen by means of electric arcs.

The production of nitric acid from air by electricity is based on the effect of the electric spark or arc on air. When an electric arc is dischargsurrounding it undergoes a change, the oxygen and nitrogen of the air unite to form NO and NO2. The oxides of the nitrogen thus formed can be turned into nitric acid; and nitrates follow from a natural order of things, so to speak. At the beginning of this twentieth century, a whole series of experiments were made to lay out conditions for the attainment of an advantageous output of nitric acid for a given amoun of electrical energy expended. These attempts were not very encouraging. and the commercial solution of the nitrogen problem seemed very far off.

Amongst such experimenters can be cited Gaye in Switzerland, Bradley and Lovejoy in the United States. Kowalski and Moscicki in Freiburg. The fundamental idea running all through their experiments is the ne cessity of obtaining electric arcs of the greatest possible length an smallest possible section in order that the greatest volume of air might be brought into contact with the surface of the arc. This meant high voltages and multiplicity of arcs.

Bradley and Lovejoy, in their in stallation of Niagara used electric furnaces, where the arcs were struck between movable contacts, and they obtained a countless number of small arcs, as much as 400,000 per minute in a furnace of a few kilowatts. The apparatus was complicated, and costly as well as subjected to very rapid deterioration. A large amount of power was required to rotate large iron cylinders forming the furnaces, and the yield was so small that the cost of production on a large scale was greater than the corresponding price

for sodium nitrate. Birkeland and Eyde, in Norway, in 1903, had observed that the electric discharges of a moderately high voltage alternating current is spread out in the form of a circular sheet when subjected to a magnetic field, and that in passing air through that luminous sheet the oxidation of nitrogen was greatly accelerated. They saw the possibility of using lower

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The Birkeland and Eyde furnace

Fig 1, has been extensively used. Its

most distinctive features are the use

of electro-magnets, which distort the

are tube copper electredes placed

flame extending radially outward

from the electrodes. The air enters

the furnace and is distributed to the arc through holes in the firebrick lining of the furnace. The products

are withdrawn from the periphery of

rent employed has 50 periods

a distance of 4 miles at 5,000 volts,

through 3 heavy transmission lines

them. The steam thus raised is em-

brought down to about 200 deg., but

they are further cooled to about 50

gases then enter into absorption tow-

consists of huge stone towers 63 feet

which water and the nitric acid form-

ed are made to trickle. Acid is con-

density it is pumped to open granite

of granite tanks, where reaching or

dinary limestone, it is converted int

neutral solution of neutral calcium

citrate. This neutral lye is carried

further into vaporisation chambers of

iron, where it is vaporised to a

boiling point answering to a concen-

tration of from 75 to 80 per cent. of

calcium nitrate containing about 13.5

per cent. of nitrogen. This substance

is then run into drums, where it con-

geals, and in that form appears on

Nitric acid of commerce is manu-

The Norwegian Nitrogen Company

and its subsidiary companies, have

undertaken solely for the needs of

their industry the construction of a

number of hydro-electric plants, the

total capacity of which will reach the

figure of 540,000 H.P. Four plants of

1914. 720,000 H.P. will produce 250,-

000 tons of nitrate a year. In 191

German imported 725,000 tons of ni-

trate of soda niter, whilst England

is remembered that the Chilean salt-

peter is the base of the manufac-

ture of powder and explosives, these

The Norwegian plants were built in

1904 to 1907, with French money, At

Noltoden and Rjukaufos, in a valley

that ten years ago contained five

houses, there was in 1910 a town of

10,000 inhabitants, with a power plant

of 250,000 H.P. shipping the nitrate

(Contniued on Page 3.)

of lime to Hamburg, Germany.

imported 135,000 tons only.

figures tell a tale.

180,000 H.P. were in operation

the market.

The

deg. in a cooling apparatus.

of two circuits each.

the furnace.

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